90156

4

Access DB# _____

# SEARCH REQUEST FORM

**Scientific and Technical Information Center**

Requester's Full Name: Blessing Fubara Examiner #: 7687 Date: 3-27-03
Art Unit: 1615 Phone Number 308-8374 Serial Number: 09/913,643
Mail Box and Bldg/Room Location: 2B 11 Results Format Preferred (circle): PAPER DISK E-MAIL
2301

**If more than one search is submitted, please prioritize searches in order of need.**

**********

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Biodegradable ceramic fibres from Silica Sols

Inventors (please provide full names): Mika Jokinen, Timo Peltola, Sinikka Veijhola, Marja Ahola, Pirjo Kortesuo

Earliest Priority Filing Date: 2/21/2000

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

- Method for preparing a controllably biodegrable Silica fibre and a composition comprising the controllably biodegrable silica fibre.

Clms attached

Thanks

BF

Point of Contact:
Susan Hanley
Technical Info. Specialist
CM1 6B05 Tel: 305-4053

L1

**********

| STAFF USE ONLY | Type of Search | | Vendors and cost where applicable | |
|---|---|---|---|---|
| Searcher: Hanley | NA Sequence (#) | | STN | |
| Searcher Phone #: | AA Sequence (#) | | Dialog | |
| Searcher Location: | Structure (#) | | Questel/Orbit | |
| Date Searcher Picked Up: 3/27 | Bibliographic | X | Dr.Link | |
| Date Completed: 4/1 | Litigation | | Lexis/Nexis | |
| Searcher Prep & Review Time: | Fulltext | | Sequence Systems | |
| Clerical Prep Time: | Patent Family | | WWW/Internet | |
| Online Time: | Other | | Other (specify) | |

PTO-1590 (8-01)

Inventor Search

FUBARA 09/913,643

```
=> d his

     (FILE 'HOME' ENTERED AT 10:12:56 ON 01 APR 2003)

     FILE 'HCAPLUS' ENTERED AT 10:13:08 ON 01 APR 2003
L1            59 JOKINEN M?/AU
L2            27 S PELTOLA T?/AU
L3             9 S VEITTOLA S?/AU
L4            30 S AHOLA M?/AU
L5            21 S KORTESUO P?/AU
L6           109 S L1-5
L7            29 S L6 AND SILICA
L8             9 S L7 AND FIBER
L9             1 S L7 AND FIBRE
L10            9 S L8-9
L11            7 S L10 AND (SPIN? OR SPUN)
                 SELECT RN L11 1-7

     FILE 'REGISTRY' ENTERED AT 10:17:23 ON 01 APR 2003
L12            8 S E1-8

     FILE 'HCAPLUS' ENTERED AT 10:17:48 ON 01 APR 2003
L13            7 S L11 AND L12
```

7 cites

=> d ibib abs hitstr ind 1-7

L13 ANSWER 1 OF 7 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2002:399839 HCAPLUS
TITLE: Drug release from biodegradable **silica fibers**
AUTHOR(S): Czuryszkiewicz, Teresa; Ahvenlammi, Jarno; **Kortesuo, Pirjo; Ahola, Manja;** Kleitz, Freddy; **Jokinen, Mika;** Linden, Mika; Rosenholm, J. B.
CORPORATE SOURCE: Department of Physical Chemistry, Abo Akademi University, Turku, 20500, Finland
SOURCE: Journal of Non-Crystalline Solids (2002), 306(1), 1-10
CODEN: JNCSBJ; ISSN: 0022-3093
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

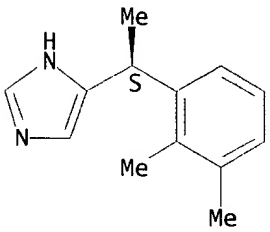
AB Sol-gel derived biodegradable SiO2 gel **fibers** have been prepd. and characterized by Raman spectroscopy, SEM, 29Si MAS NMR and TG-MS, resp. An active component, dexmedetomidine hydrochloride, was incorporated in situ into the **fiber** structure, by adding it to the sol used for **fiber spinning.** The subsequent release of the active component was studied in vitro and shown to be detd. by differences in the **fiber** structure, for which clear but indirect evidence was obtained from the different characterization methods used.

IT **7631-86-9, Silica 113775-47-6,** Dexmedetomidine
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(drug release from biodegradable **silica fibers**)
RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

RN 113775-47-6 HCAPLUS
CN 1H-Imidazole, 4-[(1S)-1-(2,3-dimethylphenyl)ethyl]- (9CI) (CA INDEX NAME)

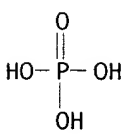
Absolute stereochemistry.




CC 63-6 (Pharmaceuticals)
ST dexmedetomidine **silica fiber**
IT Decomposition
Dissolution
Drug delivery systems
Sol-gel processing
Viscosity
(drug release from biodegradable **silica fibers**)

IT Synthetic **fibers**
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(**silica**; drug release from biodegradable **silica fibers**)
IT **Fibers**
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(**spinning**; drug release from biodegradable **silica fibers**)
IT **7631-86-9, Silica 113775-47-6**, Dexmedetomidine
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(drug release from biodegradable **silica fibers**)
REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2002:223332 HCAPLUS
DOCUMENT NUMBER: 136:373290
TITLE: Colloidal dimensions versus biodegradation and calcium phosphate formation on sol-gel derived **silica fibers**
AUTHOR(S): **Jokinen, M.**; **Peltola, T.**; **Veittola, S.**; Simola, J.; Yli-Urpo, Antti
CORPORATE SOURCE: Institute of Dentistry & Biomaterials Research, University of Turku, Turku, Turk.
SOURCE: Key Engineering Materials (2002), 218-220(Bioceramics-14), 283-286
CODEN: KEMAEY; ISSN: 1013-9826
PUBLISHER: Trans Tech Publications Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Sol-gel derived **silica fibers** were prepd. and their properties were adjusted in order to vary biodegrdn. and calcium phosphate formation. Because of limited properties to adjust chem. structure (e.g., by changing the degree of condensation) in the **spinnable**, alkoxy-derived **silica** sols, the behavior of nanoscale components, colloids, were utilized. Biodegrdn. and the **fibers** ability to form calcium phosphate on their surfaces could be varied by simple methods and it was concluded that the variations originate from the colloidal dimensions in **fibers**, in other words, from the phenomena occurring on nanoscale.
IT **10103-46-5**, Calcium phosphate
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(deposition; colloidal dimensions vs. biodegrdn. and calcium phosphate formation on sol-gel derived **silica fibers**)
RN 10103-46-5 HCAPLUS
CN Phosphoric acid, calcium salt (8CI, 9CI) (CA INDEX NAME)




Ox Ca

CC 57-2 (Ceramics)
Section cross-reference(s): 38, 63
ST **silica fiber** sol gel biodegrdn calcium phosphate formation
IT Decomposition
(biodegrdn.; colloidal dimensions vs. biodegrdn. and calcium phosphate formation on sol-gel derived **silica fibers**)
IT Colloids
Sol-gel processing
(colloidal dimensions vs. biodegrdn. and calcium phosphate formation on sol-gel derived **silica fibers**)
IT Synthetic **fibers**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(**silica**; colloidal dimensions vs. biodegrdn. and calcium phosphate formation on sol-gel derived **silica fibers**)
IT **10103-46-5**, Calcium phosphate
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(deposition; colloidal dimensions vs. biodegrdn. and calcium phosphate formation on sol-gel derived **silica fibers**)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:417221 HCAPLUS
DOCUMENT NUMBER: 135:24737
TITLE: Bioactive sol-gel-derived **silica fibers**, methods for their preparation and their use
INVENTOR(S): **Peltola, Timo**; **Jokinen, Mika**; **Veittola, Sinikka**; Yli-urpo, Antti
PATENT ASSIGNEE(S): Bioxid Oy, Finland
SOURCE: PCT Int. Appl., 45 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2001040556 | A1 | 20010607 | WO 2000-FI1034 | 20001128 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| US 2002064493 | A1 | 20020530 | US 1999-452379 | 19991201 |
| EP 1268893 | A1 | 20030102 | EP 2000-981412 | 20001128 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, IE, SI, LT, LV, FI, RO, MK, CY, AL | | | | |

PRIORITY APPLN. INFO.: US 1999-452379 A 19991201
WO 2000-FI1034 W 20001128

AB This invention relates to bioactive sol-gel derived **silica**

**fibers**, methods for their prepn., an implantable device comprising the **fibers** and the use of the device for tissue guiding or bone repair. Sol-gel derived SiO2 **fibers** were prepd. from tetra-Et orthosilicate in the presence of HNO3 or NH3v as catalysts. Dry **spinning** was used to prep. the sol-gel **fibers**.

IT **11099-06-2P**, Silicic acid, ethyl ester
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(**fiber**; bioactive sol-gel-derived **silica fibers** for implants)

RN 11099-06-2 HCAPLUS
CN Silicic acid, ethyl ester (9CI) (CA INDEX NAME)

CM 1

CRN 1343-98-2
CMF Unspecified
CCI MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

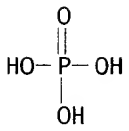
CRN 64-17-5
CMF C2 H6 O

$H_3C-CH_2-OH$

IC ICM D01F009-08
ICS C03B037-00
CC 63-7 (Pharmaceuticals)
Section cross-reference(s): 40
ST bioactive sol gel **silica fiber** implant
IT Sol-gel transition
Viscosity
(bioactive sol-gel-derived **silica fibers** for implants)
IT Prosthetic materials and Prosthetics
(implants; bioactive sol-gel-derived **silica fibers** for implants)
IT Textiles
(knitted; bioactive sol-gel-derived **silica fibers** for implants)
IT Bone
(repair of; bioactive sol-gel-derived **silica fibers** for implants)
IT Synthetic **fibers**
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(**silica**; bioactive sol-gel-derived **silica fibers** for implants)
IT Mats
(woven or nonwoven; bioactive sol-gel-derived **silica fibers** for implants)
IT **11099-06-2P**, Silicic acid, ethyl ester
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(**fiber**; bioactive sol-gel-derived **silica**

**fibers** for implants)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:61153 HCAPLUS
DOCUMENT NUMBER: 134:256807
TITLE: In vitro bioactivity and structural features of mildly heat-treated sol-gel-derived **silica fibers**
AUTHOR(S): **Peltola, T.**; **Jokinen, M.**; **Veittola, S.**; Simola, J.; Yli-Urpo, A.
CORPORATE SOURCE: Institute of Dentistry, University of Turku, Turku, FIN-20520, Finland
SOURCE: Journal of Biomedical Materials Research (2000), Volume Date 2001, 54(4), 579-590
CODEN: JBMRBG; ISSN: 0021-9304
PUBLISHER: John Wiley & Sons, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The ability of sol-gel-derived **silica fibers** heat treated at a low temp. to induce formation of bone-like calcium phosphate (HCA) on their surfaces provides alternatives for the design of novel biomaterials, for example as implants used in tissue guiding or bone repairs. In this study, dry **spinning** was used to prep. the sol-gel **fibers**, which were heat-treated at 175.degree. and 250.degree.C. In addn., the differences in the surface topog. (in a nanometer scale) of different **fibers** with respect to their in vitro bioactivity were studied. The structure of the **fibers** was varied using three different factors: (1) **spinnable** sols having varying structures and sizes of **silica** polymers to establish varying viscosity levels; (2) aging of green-state **fibers**; and (3) heat treatment of **fibers**. The in vitro bioactivity and soly. tests were done in simulated body fluid (SBF). To monitor surface topog. and roughness of the heat-treated **silica fibers**, a scanning probe microscopy (SPM) with tapping mode AFM was used. Different **fibers** obtained clearly different properties. The **fibers spun** at about .eta. > 3.0 Pas had the best properties with respect to bioactivity, esp. when they were heat-treated at 175.degree.C. It was found that surface structure in a nanometer scale was the most important factor controlling the in vitro bioactivity of heat-treated **silica fibers**. The correct proportions between the peaks and peak distances at the surfaces are suggested to be important with respect to in vitro bioactivity. The results indicate that peak distance distribution between 5-50 nm, esp. between 5-20 nm, together with a peak height .gtoreq.1 nm is most favorable for calcium phosphate formation.
IT **10103-46-5**, Calcium phosphate
RL: DEV (Device component use); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses).
(in vitro bioactivity and structural features of mildly heat-treated sol-gel-derived **silica fibers**)
RN 10103-46-5 HCAPLUS
CN Phosphoric acid, calcium salt (8CI, 9CI) (CA INDEX NAME)



Ox Ca

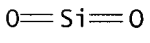
CC 63-7 (Pharmaceuticals)
ST bioactivity structure heat **silica fiber**
IT Prosthetic materials and Prosthetics
(implants; in vitro bioactivity and structural features of mildly heat-treated sol-gel-derived **silica fibers**)
IT Body fluid
Bone
Prosthetic materials and Prosthetics
Solubility
Surface roughness
Surface structure
(in vitro bioactivity and structural features of mildly heat-treated sol-gel-derived **silica fibers**)
IT Temperature
(low; in vitro bioactivity and structural features of mildly heat-treated sol-gel-derived **silica fibers**)
IT Synthetic **fibers**
RL: DEV (Device component use); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(**silica**; in vitro bioactivity and structural features of mildly heat-treated sol-gel-derived **silica fibers**)
IT **10103-46-5**, Calcium phosphate
RL: DEV (Device component use); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(in vitro bioactivity and structural features of mildly heat-treated sol-gel-derived **silica fibers**)
REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2001:43878 HCAPLUS
DOCUMENT NUMBER: 135:142155
TITLE: Influence of sol and stage of **spinnability** on in vitro bioactivity and dissolution of sol-gel-derived SiO2 **fibers**
AUTHOR(S): **Peltola, T.**; **Jokinen, M.**; **Veittola, S.**; Rahiala, H.; Yli-Urpo, A.
CORPORATE SOURCE: Institute of Denistry, University of Turku, Turku, FIN-20520, Finland
SOURCE: Biomaterials (2001), 22(6), 589-598
CODEN: BIMADU; ISSN: 0142-9612
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The ability of the sol-gel-derived green state **silica fibers** to induce the formation of bone-like calcium phosphate (HCA) on their surfaces has not been studied earlier. Bioactive **silica fibers** provide alternatives for the design of novel products, e.g., as implants used in tissue guiding or bone repairs.

In this study, dry **spinning** was used to prep. the sol-gel **fibers**. Different **fibers** with different bulk structures were prepd. by changing the compn. and controlling the stage of **spinnability**. Addnl., the influence of the aging time of the **fibers** on the bulk structure of the samples was investigated. Furthermore, the ability to form calcium phosphate was investigated in vitro in the simulated body fluid (SBF). Transmission electron microscopy was used to illustrate the bulk structure of the green state **fibers** and SEM to illustrate the formed calcium phosphate layer on the **fibers**. The **fibers** were addnl. characterized by measuring the dissoln. of the **silica** in the SBF. In vitro bioactive **silica fibers** were successfully prepd. The calcium phosphate layer was formed within 1-5 days in the best case. The structural stability and the in vitro bioactivity varied with the aging time expect in one case where practically stable **fibers** could be prepd. The concn. of **silica** released in the SBF had no direct connection with the HCA formation. The **silica**-rich gel layer was not obsd. on the **fibers**, but the structure of the **fibers** was suggested to have an important role in the HCA formation.

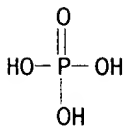
IT **7631-86-9P**, **Silica**, biological studies
RL: DEV (Device component use); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(influence of sol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 **fibers**)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **10103-46-5**, Calcium phosphate (
RL: DEV (Device component use); FMU (Formation, unclassified); THU (Therapeutic use); BIOL (Biological study); FORM (Formation, nonpreparative); USES (Uses)
(influence of sol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 fibersol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 **fibers**)

RN 10103-46-5 HCAPLUS
CN Phosphoric acid, calcium salt (8CI, 9CI) (CA INDEX NAME)



Ox Ca

CC 63-7 (Pharmaceuticals)
ST **silica** sol **spinning** bioactivity dissoln **fiber**
IT Drug delivery systems
(implants; influence of sol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 **fibers**

)
IT Dissolution rate
Sol-gel processing
(influence of sol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 **fibers**)
IT Synthetic **fibers**
RL: DEV (Device component use); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(**silica**; influence of sol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 **fibers**)
IT Physical properties
(**spinnability**; influence of sol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 **fibers**)
IT **7631-86-9P**, **Silica**, biological studies
RL: DEV (Device component use); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(influence of sol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 **fibers**)
IT **10103-46-5**, Calcium phosphate (
RL: DEV (Device component use); FMU (Formation, unclassified); THU (Therapeutic use); BIOL (Biological study); FORM (Formation, nonpreparative); USES (Uses)
(influence of sol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 fibersol and stage of **spinnability** on in vitro bioactivity and dissoln. of sol-gel-derived SiO2 **fibers**)
REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2000:608680 HCAPLUS
DOCUMENT NUMBER: 133:198694
TITLE: Biodegradable ceramic **fibers** from **silica** sols
INVENTOR(S): **Jokinen, Mika**; **Peltola, Timo**; **Veittola, Sinikka**; **Ahola, Manja**; **Kortesuo, Pirjo**
PATENT ASSIGNEE(S): Finland
SOURCE: PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| WO 2000050349 | A2 | 20000831 | WO 2000-FI131 | 20000221 |
| WO 2000050349 | A3 | 20010802 | | |

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,

DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

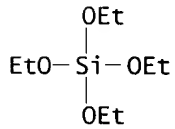
| | | | | |
|---|---|---|---|---|
| CA 2359699 | AA | 20000831 | CA 2000-2359699 | 20000221 |
| EP 1144323 | A2 | 20011017 | EP 2000-906390 | 20000221 |
| EP 1144323 | A3 | 20011219 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| JP 2002537502 | T2 | 20021105 | JP 2000-600935 | 20000221 |
| NO 2001004014 | A | 20010817 | NO 2001-4014 | 20010817 |

PRIORITY APPLN. INFO.: US 1999-121180P P 19990222
WO 2000-FI131 W 20000221

AB The present invention relates to a method for prepg. controllably biodegradable **silica fibers**. The method comprises **spinning** the **fibers** from a **silica** sol, the viscosity of the sol being controlled. Further, the present invention relates to controllably biodegradable **silica fibers** prepd. according to the invention and methods for controlling the biodegradability of the **fibers**. The invention also relates to controllably biodegradable **fibers** as sustained and/or controlled release delivery devices for biol. active agents, and to pharmaceutical prepns. comprising such devices. A sol for the **fiber spinning** was prepd. from tetra-Et orthosilicate, deionized water, ethanol and HNO3 as a catalyst by using the sol-gel method. Dexmedetomidine-HCl was added after the ethanol evapn., and the viscosity was 5600 mPas when the **spinning** process was started. The **fibers** were packed and stored air tightly in aluminum foils bags at room temp. until the dissoln. tests were carried out. The release of dexmedetomidine-HCl showed a burst (33%) at the **spinning** viscosity <10,000 mPas. When the **spinning** viscosity was increased to more than 11500 mPas, the burst effect was decreased to 3-10%. At **spinning** viscosity above 11500 mPas the release rate of dexmedetomidine-HCl was decreased compared to **fibers spun** <11500 mPas.

IT **78-10-4P**, Tetraethyl silicate
RL: SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(biodegradable ceramic **fibers** from **silica** sols)

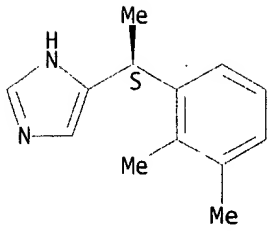
RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



IT **113775-47-6**, Dexmedetomidine **145108-58-3**
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(biodegradable ceramic **fibers** from **silica** sols)

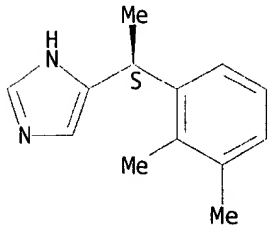
RN 113775-47-6 HCAPLUS
CN 1H-Imidazole, 4-[(1S)-1-(2,3-dimethylphenyl)ethyl]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 145108-58-3 HCAPLUS
CN 1H-Imidazole, 4-[(1S)-1-(2,3-dimethylphenyl)ethyl]-, monohydrochloride (9CI) (CA INDEX NAME)

Absolute stereochemistry.



● HCl

IC ICM C03B037-00
CC 63-6 (Pharmaceuticals)
ST biodegradable ceramic **fiber silica** sol prepn; drug release ceramic **fiber** prepn
IT Animal cell
Animal virus
Bacteria (Eubacteria)
Dissolution rate
Drug delivery systems
Sol-gel transition
Viscosity
(biodegradable ceramic **fibers** from **silica** sols)
IT Hormones, animal, biological studies
Proteins, general, biological studies
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(biodegradable ceramic **fibers** from **silica** sols)
IT Decomposition
(biodegrdn.; biodegradable ceramic **fibers** from **silica** sols)
IT Synthetic **fibers**
RL: SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(ceramic; biodegradable ceramic **fibers** from **silica** sols)
IT **78-10-4P**, Tetraethyl silicate
RL: SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(biodegradable ceramic **fibers** from **silica** sols)
IT **113775-47-6**, Dexmedetomidine **145108-58-3**

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(biodegradable ceramic **fibers** from **silica** sols)

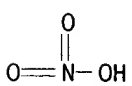
L13 ANSWER 7 OF 7 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2000:581573 HCAPLUS
DOCUMENT NUMBER: 133:299851
TITLE: Adjustable biodegradation for ceramic **fibres** derived from **silica** sols
AUTHOR(S): **Jokinen, M.**; **Peltola, T.**; **Veittola, S.**; Rahiala, H.; Rosenholm, J. B.
CORPORATE SOURCE: Department of Physical Chemistry, Abo Akademi University, Turku, FIN-20500, Finland
SOURCE: Journal of the European Ceramic Society (2000), 20(11), 1739-1748
CODEN: JECSER; ISSN: 0955-2219
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Biodegradable **silica fibers** were prepd. from TEOS-derived **silica** sols by dry **spinning**. The **spinnability** of the sols and its influence on the green state **fiber** structure were investigated. The same sols can be used to prep. different **fiber** structures depending on the process stage, temp. and viscosity. The **spinning** moment was found to be important in control of biodegrdn. The effects of catalysts (HNO3 and/or NH3) as well as evapn. of the liq. on the process were investigated. They did not have an influence on the **spinnability**, but they reduced the overall reaction time. The prepd. green state **fibers** were aged for 1 and 3 mo indicating stable structure as a function of aging time according to the biodegrdn. expts., except in the case of high catalyst concn. A porous structure was revealed using TEM. Heat-treatment of the **fibers** induced remarkable differences in the **fiber** bulk structure according to FTIR measurements.

IT **7664-41-7**, Ammonia, uses **7697-37-2**, Nitric acid, uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)
RN 7664-41-7 HCAPLUS
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

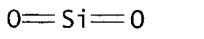
$NH_3$

RN 7697-37-2 HCAPLUS
CN Nitric acid (8CI, 9CI) (CA INDEX NAME)

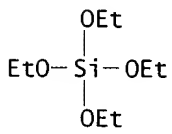


IT **7631-86-9P**, **Silica**, preparation
RL: BUU (Biological use, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
(**fibers**, biodegradable; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **78-10-4**, Silicic acid (H4SiO4), tetraethyl ester
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(precursor; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)
RN 78-10-4 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



CC 57-1 (Ceramics)
Section cross-reference(s): 63
ST **silica fiber** sol gel prepn adjustable biodegrdn biomedical use
IT Ceramics
(biocompatible, **silica fibers**; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)
IT Biodegradable materials
(**silica fibers**; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)
IT Synthetic **fibers**
RL: BUU (Biological use, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
(**silica**, biodegradable; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)
IT Sol-gel processing
(**spinning**; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)
IT **7664-41-7**, Ammonia, uses **7697-37-2**, Nitric acid, uses
RL: CAT (Catalyst use); USES (Uses)
(catalysts; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)
IT **7631-86-9P**, **Silica**, preparation
RL: BUU (Biological use, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
(**fibers**, biodegradable; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)
IT **78-10-4**, Silicic acid (H4SiO4), tetraethyl ester
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(precursor; sol-gel prepn. of **silica fibers** with adjustable biodegrdn. kinetics)
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT